

### Remarks

The Office Action mailed July 26, 2007, and made final, has been carefully reviewed and the following remarks have been made in consequence thereof.

Claims 1, 3-6, and 8-22 are now pending in this application. Claims 1-6 are rejected. Claims 8-20 have been withdrawn from consideration. Claims 2 and 7 have been canceled. Claims 21 and 22 are newly added.

Applicants acknowledge with appreciation that the restriction requirement previously imposed has been withdrawn.

The objection to Claim 2 is respectfully traversed. Applicants have cancelled Claim 2. For at least the reasons set forth above, Applicants respectfully request that the objection to Claim 2 be withdrawn.

The rejection of Claim 3 under 35 U.S.C. § 112, first paragraph is respectfully traversed. Claim 3 has been amended to more clearly recite the subject matter claimed as the invention. For the reasons set forth above, Applicants respectfully request that the Section 112 rejection, first paragraph be withdrawn.

The rejection of Claim 2 under 35 U.S.C. § 112, second paragraph is respectfully traversed. Claim 2 has been cancelled. For at least the reasons set forth above, Applicants respectfully request that the rejection to Claim 2 under Section 112 be withdrawn.

The rejection of Claims 1-6 under 35 U.S.C. § 103(a) as being anticipated by Meier et al. (U.S. Patent No. 6,438,838) ("Meier") is respectfully traversed.

Meier describes a method for repairing a vane (5) for a turbine. The repair method requires the damaged vane (5) to be severed along a parting plane (12) such that a damaged section, such as vane section (5'), is removed and a stub (13) is formed. During the repair process, an inductor (16) is arranged around the periphery (15) of stub (13) to soften the periphery (15). A replacement vane (20) that corresponds in shape and curvature to stub (13)

is aligned with stub (13) and is then welded to stub (13) *in a protective gas atmosphere using high-frequency welding* (Col. 4, lines 9-10). Specifically, when a high-frequency current is applied to inductor (16), the material of stub (13) and replacement vane (20) melts or is softened to cause replacement vane (20) and stub (13) to be bonded together. Notably, Meier does not describe nor suggest coupling, with *resistance welding*, a replacement blade portion to a remaining blade portion with a single-pass weld to form a single weld joint extending along a cut line.

Claim 1 recites a method of replacing a portion of a gas turbine engine rotor blade, the rotor blade having an original blade contour defined by a blade first sidewall and a blade second sidewall, the method comprising “cutting through the rotor blade such that a cut line extends from a leading edge of the blade to a trailing edge of the blade and between the first sidewall and the second sidewall, and such that the cut line extends at least partially through a hollow portion of the blade defined between the first and second sidewalls . . . removing the portion of the rotor blade that is radially outward of the cut line . . . and coupling, with resistance welding, a replacement blade portion to a remaining blade portion with a single-pass weld to form a single weld joint extending along the cut line such that a newly formed rotor blade is formed with an aerodynamic contour that is one of an improvement in aerodynamic performance over the original blade contour and mirroring the original blade contour.”

Meier does not describe or suggest a method of replacing a portion of a gas turbine engine damaged rotor blade as is recited in Claim 1. Specifically, Meier does not describe nor suggest coupling, *with resistance welding*, a replacement blade portion to a remaining blade portion with a single-pass weld to form a single weld joint extending along a cut line extending from a leading edge to a trailing edge of the blade. Rather, in contrast to the invention, Meier describes a method for repairing a damaged vane wherein a replacement vane is welded to a stub along a parting plane using *high-frequency welding completed in a protective gas atmosphere*.

Accordingly, for the reasons set forth above, Claim 1 is submitted to be patentable over Meier.

Claim 2 has been cancelled. Claims 3-6 depend, directly or indirectly, from independent Claim 1. When the recitations of Claims 3-6 are considered in combination with the recitations of Claim 1, Applicants submit that Claims 3-6 likewise are patentable over Meier.

For at least the reasons set forth above, Applicants respectfully request that the Section 102 rejection of Claims 1-6 be withdrawn.

The rejection of Claims 1-6 under 35 U.S.C. § 103 as being unpatentable over Meier et al. (U.S. Patent No. 6,438,838) (“Meier”) in view of Wachtell et al. (U.S. Patent No. 3,650,635) (“Wachtell”) is respectfully traversed.

Meier is described above. Wachtell describes a method for repairing turbine guide vanes wherein at least one vane includes a defect. A longitudinal section of the vane including the defect is cut out of the vane and removed. A longitudinal insert including columnar grains extending along a trailing edge of the vane is then welded using either *tungsten inert gas welding* or *electron beam welding* to the turbine vane to replace the section that was removed (Col. 4, lines 3-9). Notably, Wachtell does not describe nor suggest coupling, with *resistance welding*, a replacement blade portion to a remaining blade portion with a single-pass weld to form a single weld joint extending along a cut line.

Claim 1 recites a method of replacing a portion of a gas turbine engine rotor blade, the rotor blade having an original blade contour defined by a blade first sidewall and a blade second sidewall, the method comprising “cutting through the rotor blade such that a cut line extends from a leading edge of the blade to a trailing edge of the blade and between the first sidewall and the second sidewall, and such that the cut line extends at least partially through a hollow portion of the blade defined between the first and second sidewalls . . . removing the portion of the rotor blade that is radially outward of the cut line . . . and coupling, with resistance welding, a replacement blade portion to a remaining blade portion with a single-pass weld to form a single weld joint extending along the cut line such that a newly formed rotor blade is formed with an aerodynamic contour that is one of an improvement in

aerodynamic performance over the original blade contour and mirroring the original blade contour.”

Neither Meier nor Wachtell, considered alone or in combination, describe nor suggest a method of replacing a portion of a gas turbine engine rotor blade as is recited in Claim 1. More specifically, neither Meier nor Wachtell, considered alone or in combination, describe nor suggest coupling, with resistance welding, a replacement blade portion to a remaining blade portion with a single-pass weld to form a single weld joint extending along a cut line extending from a leading edge to a trailing edge of the blade. Rather, in contrast to the invention, Meier describes a method for repairing a damaged vane wherein a replacement vane is welded to a stub along a parting plane using *high-frequency welding completed in a protective gas atmosphere*, and Wachtell describes a method for replacing a longitudinal section of a turbine vane wherein a longitudinal insert is welded to the turbine vane using *tungsten inert gas welding or electron beam welding*.

Applicants submit that modifying the teachings of Meier with the teachings of Wachtell does not describe or suggest a method of replacing a portion of a gas turbine engine rotor blade as recited in Claim 1. Particularly, modifying Meier with Wachtell does not cure the deficiencies of Meier.

Accordingly, for at least the reasons set forth above, Claim 1 is submitted to be patentable over Meier in view of Wachtell.

Claim 2 has been cancelled. Claims 3-6 depend from independent Claim 1. When the recitations of Claims 3-6 are considered in combination with the recitations of Claim 1, Applicants submit that dependent Claims 3-6 likewise are patentable over Meier in view of Wachtell.

For the reasons set forth above, Applicants respectfully request that the Section 103 rejection of Claims 1-6 be withdrawn.

Moreover, Applicants respectfully submit that the Section 103 rejection of the presently pending claims is not a proper rejection. As is well established, the mere fact that

the prior art structure could be modified does not make such a modification obvious unless the prior art suggests the desirability of doing so. See In re Gordon, 221 U.S.P.Q.2d 1125 (Fed. Cir. 1984). Furthermore, the Federal Circuit has determined that:

[i]t is impermissible to use the claimed invention as an instruction manual or “template” to piece together the teachings of the prior art so that the claimed invention is rendered obvious. This court has previously stated that “[o]ne cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention.

In re Fritch, 23 U.S.P.Q.2d 1780, 1784 (Fed. Cir. 1992).

Further, under Section 103, “it is impermissible . . . to pick and choose from any one reference only so much of it as will support a given position, to the exclusion of other parts necessary to the full appreciation of what such reference fairly suggests to one of ordinary skill in the art.” In re Wesslau, 147 U.S.P.Q. 391, 393 (CCPA 1965). Rather, there must be some suggestion, outside of Applicants’ disclosure, in the prior art to combine such references, and a reasonable expectation of success must be both found in the prior art, and not based on Applicants’ disclosure. In re Vaeck, 20 U.S.P.Q.2d 1436 (Fed. Cir. 1991). Moreover, the United States Supreme Court has recently expressed concern regarding distortion caused by hindsight bias in an obvious analysis, and notes that factfinders should be cautious of arguments reliant upon ex post reasoning. See KSR International Co. v. Teleflex, Inc., slip Opinion at page 17. In the present case, neither a suggestion nor motivation to combine the cited art, nor any reasonable expectation of success has been shown.

Accordingly, since there is no teaching or suggestion in the cited art for the claimed combination, the Section 103 rejection appears to be based on hindsight reconstruction in which isolated disclosures have been picked and chosen in an attempt to deprecate the present invention. Of course, such a combination is impermissible, and for at least this reason, Applicants submit that Claim 1 is patentable over Meier in view of Wachtell.

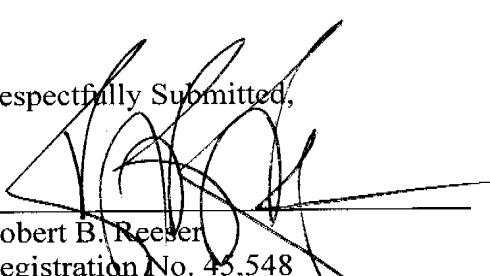
Moreover, if art “teaches away” from a claimed invention, such a teaching supports the nonobviousness of the invention. U.S. v. Adams, 148 USPQ 479 (1966); Gillette Co. v.

S.C. Johnson & Son, Inc., 16 USPQ2d 1923, 1927 (Fed. Cir. 1990). In light of this standard, it is respectfully submitted that the cited art, as a whole, is not suggestive of the presently claimed invention. Moreover, Applicants respectfully submit Meier and Wachtell each teach away from the method of replacing a portion of a gas turbine engine rotor blade as is recited in Claim 1. Specifically, Meier is directed to a method of repairing a blade using high-frequency welding completed in a protective gas atmosphere, and Wachtell is directed to a method of replacing a blade using tungsten inert gas welding, or electron beam welding. As such, neither Meier nor Wachtell, either alone, or in combination, describe or teach “coupling, with *resistance welding*, a replacement blade portion to a remaining blade portion with a single-pass weld to form a single weld joint extending along a cut line” as recited in Claim 1. Accordingly, Applicants respectfully submit that the cited art as a whole teaches away from coupling, with resistance welding, a replacement blade portion to a remaining blade portion as recited. For at least the reasons set forth above, Applicants respectfully submit that Claim 1 is patentable over Meier in view of Wachtell.

Newly added Claims 21 and 22 depend from independent Claim 1. When the recitations of these claims are considered in combination with the recitations of Claim 1, Applicants submit that Claims 21 and 22 likewise are patentable over the cited art.

In view of the foregoing amendment and remarks, all the claims now active in this application are believed to be in condition for allowance. Reconsideration and favorable action is respectfully solicited.

Respectfully Submitted,



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